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Claims

[c1] A dual capacitance accelerometer comprising:
a housing;
a first flexure plate coupled to said housing and defining a first flex axis;
a second flexure plate fixed within said housing spaced apart from said first flexure plate and defining a second flex axis in parallel relation to said first flex axis;
a rigid plate adjacent to and in substantially parallel relation to said first and second flexure plates, said rigid plate coupled to said housing, said rigid plate and said first flexure plate defining a first distance and said rigid plate and said second flexure plate defining a second distance,
wherein said first distance varies in response to acceleration forces acting upon said first flexure plate thereby generating a first frequency signal from said first flexure plate and wherein said second distance varies in response to acceleration forces acting upon said second flexure plate thereby generating a second frequency signal from said second flexure plate; and
a controller receiving said first frequency signal and said second frequency signal, said controller generating a lin-

ear acceleration signal in response to a fraction of a sum of said first accelerometer signal and said second accelerometer signal, said controller further generating an accelerometer stabilizing controller signal in response to said first frequency signal and said second frequency signal, thereby maintaining said first flexure plate and said second flexure plate in a common plane.

[c2] The system of claim 1, wherein said controller further generating an angular acceleration signal from a fraction of a difference of said first frequency signal and said second frequency signal.

[c3] The system of claim 1, wherein said controller controls a missile system in response to said first frequency signal and said second frequency signal.

[c4] The system of claim 1 further comprising a first input controller, wherein said first input controller subtracts a first initialization frequency from said first frequency signal.

[c5] The system of claim 1 further comprising a second input controller, wherein said second input controller subtracts a second initialization frequency from said second frequency signal.

[c6] The system of claim 1, further comprising a first oscilla-

tor generating said first frequency signal in response to variations in said first distance.

[c7] The system of claim 1 further comprising a second oscillator generating said second frequency signal in response to variations in said second distance.

[c8] A method for operating an accelerometer system defining a z-spin axis comprising:
generating a first frequency signal from a first flexure and a rigid plate along a first flex axis;
generating a second frequency signal from a second flexure plate and said rigid plate along a second flex axis parallel to and spaced a distance from said first flex axis;
controlling an inertial platform such that said first flexure plate and said second flexure plate remain in an xz-plane;
averaging said first frequency signal and said second frequency signal; and
generating a linear acceleration signal.

[c9] The method of claim 8 further comprising compensating for non-linearities within said linear acceleration signal.

[c10] The method of claim 8 further comprising generating a digital word proportional to an angular acceleration around a z-axis.

[c11] The method of claim 10 further comprising activating an object control device in response to said linear accelerations signal.

[c12] The method of claim 8 further comprising averaging said first frequency signal and a negative value of said second frequency signal and generating an angular acceleration signal.

[c13] The method of claim 12, wherein averaging said first frequency signal and a negative value of said second frequency signal further comprises generating a difference of amplitudes of said first frequency signal and said second frequency signal.

[c14] The method of claim 8 further comprising compensating for non-linearities within said angular acceleration signal.

[c15] The system of claim 8 further comprising subtracting a first initialization frequency from said first frequency signal, and subtracting a second initialization frequency from said second frequency signal.

[c16] An accelerometer system comprising:
an inertial platform maintaining a minimized rotation in response to a stabilizing controller signal;

a rigid plate system coupled to said inertial platform and defining a reference plane, a spin axis, and a linear acceleration axis, wherein said spin axis is within said reference plane and said linear acceleration axis is perpendicular to said reference plane;

a first flexure plate defining a first flex axis, said first flexure plate adjacent to said rigid plate system a first distance from said spin axis, said first flexure plate generating a first frequency signal in response to acceleration of said first flexure plate;

a second flexure plate defining a second flex axis, said second flexure plate adjacent to said rigid plate system a second distance from said spin axis, said second flexure plate generating a second frequency signal in response to acceleration of said second flexure plate; and

a controller comprising a first frequency control device and a second frequency control device, said controller receiving said first frequency signal and said second frequency signal,

said first frequency control device generating an angular acceleration signal from a difference of said first frequency signal and said second frequency signal,

said second frequency control device generating a linear acceleration signal in response to a sum of said first frequency signal and said second frequency signal,

said controller further generating said stabilizing con-

troller signal in response to said first frequency signal and said second frequency signal, and
said controller controlling a missile system in response to said first frequency signal and said second frequency signal.

[c17] The system of claim 16, wherein said first flex axis and said second flex axis are perpendicular to said linear acceleration axis.

[c18] The system of claim 16, wherein said rigid plate system comprises a single rigid plate or a plurality of rigid plates arranged in an electrically dynamic relation to said first flexure plate or said second flexure plate.

[c19] The system of claim 16 further comprising a first input controller and a second input controller, wherein said first input controller subtracts a first initialization frequency from said first frequency signal, and said second input controller subtracts a second initialization frequency from said second frequency signal.

[c20] The system of claim 16, wherein said controller further comprises a first linearizer linearizing said angular acceleration signal and wherein said controller further comprises a second linearizer linearizing said linear acceleration signal.